The Relationship Context of Early Fatherhood:
National Estimates Based on Multiple Surveys

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Extensions for the PAA paper

We are in the process of revising the paper. First, we will eliminate the NSFG analysis and focus on data from the NLSY79 and NLSY97 cohorts, because these allow comparisons across cohorts using data sets that are more comparable. Another benefit to focusing on the NLSY data sets is that we can include a broader range of covariates, including family income when growing up, family structure at birth, and other detailed characteristics of the family of origin. Finally, we are adding information about cohabitation from the NLSY79 to allow us to compare changes over time in the likelihood that an early birth will be to a cohabiting union.

1. Introduction

Although fertility rates for teens and young adults have declined in recent years, concern about fertility for this group remains because a large and increasing proportion of births to teens and young adults occurs to single or cohabiting parents. In this paper we examine whether the individual and family background characteristics associated with early fertility also differentiate between the relationship context of these early first births (e.g. non-marital versus marital, and single versus cohabiting). We use a competing risks event history framework to estimate the likelihood of a first birth for women and men ages 15-24 in different relationship contexts. To examine cohort differences in these relationships, we combine three nationally representative data sets—the 1979 and 1997 National Longitudinal Surveys of Youth and 2002 National Survey of Family Growth.

This paper makes a number of contributions to the literature. First, we bring together theory and empirical models about early fertility and about the relationship context of early first births. Most of the research on this topic looks at teen childbearing regardless of the relationship context of the birth or focuses exclusively on premarital fertility. Studies in this area use different data sources, dependent variables, and independent variables, making it difficult to draw substantive conclusions from the existing literature. Understanding the difference between characteristics that predict early births and characteristics that predict whether the early birth is marital or non-marital is important given the recently policy emphasis in the U.S. on marriage. A second contribution is that we distinguish births to cohabitors from those to single parents. By assessing whether the characteristics associated with cohabiting births are more like those associated with marital births or like those associated with single births, we contribute to the debate about the nature of cohabitation (Manning and Smock 2005). Third, the social context within which early fertility and relationship decisions are being made has changed substantially

over time. Women's employment has increased substantially, non-traditional family structures have increased, and parental education levels have risen. These changes may lead to differences between cohorts in the correlation between certain family background characteristics and early family formation behavior. The changes in the population may also lead to differences in the prevalence of different family formation behaviors, since these characteristics have been linked to early family formation decisions. We explore both of these possibilities in this paper. Finally, we estimate models for both men and women. Bachrach (2006) argues that "there is an imbalance in basic knowledge about [fertility and parenthood] from the male and female perspective. Correcting this imbalance is important not only for answering policy questions, but also for addressing broader questions of human development."

We will answer three research questions. First, among those with early births, do background characteristics such as education and family structure differentiate those with nonmarital and marital births? Do they differentiate between single, cohabiting, and marital births? Next, have the *effects* of these background characteristics changed over time as their levels have changed? And finally, do changes in the *levels* of these background characteristics explain the observed change in the relationship context of early first births?

The paper is organized as follows. Section 2 discusses the existing literature and outlines a conceptual framework. Section 3 describes the data sets and our analysis plan. Section 4 presents the empirical results, Section 5 highlights our findings, and Section 6 discusses our findings in light of the current policy debates surrounding marriage and early fertility.

2. Background

Early fertility

Our empirical models are designed to identify whether the factors that predict early fertility also predict whether that early birth will be marital or non-marital, and whether the early

birth will be to single or cohabiting parents. These distinctions are not trivial. Past policy efforts have focused on reducing early fertility, but recent policy initiatives also focus on promoting marriage. While theoretical models for early fertility are well established and substantiated in the literature (Lundberg and Plotnick 1995, Maxwell and Mott 1987, Glick et al. 2006), theories about marriage and cohabitation often do not focus explicitly on the relationship context of births, especially *early* births. Our study will explore the factors that predict the various relationship contexts of early births. It will also determine if these factors have different effects for men and women and have different effects over time.

Much of the recent work on early fertility has used an economic or rational choice model that highlights the role of opportunity costs in decisions about childbearing (Huang 2005, Nock 1998, Duncan and Hoffman 1990). Most studies have focused on women's fertility and assume that women do a majority of the caregiving, making child rearing time intensive for women. Studies generally find that the competing time demands of school/work and family roles reduce the fertility of women in young adulthood. In particular, high educational aspirations and variables that are proxies for anticipated higher education and wages are negatively associated with early female fertility (Duncan and Hoffman 1990, Duncan et al. 1998, Harris et al. 2002, Plotnick 1992).

The costs may differ for men and women because of the traditionally different roles mothers and fathers play in childrearing. In addition, as men's family roles are changing, defining opportunity costs for men is less straightforward. The typical role for men is that of an economic provider, not a caregiver. Early fatherhood may result in men leaving school early to enter the workforce in order to support their children (Nock 1998). This may be a salient consequence, especially for teens with high educational aspirations. However, for men after their early 20s or for those who do not intend to complete or attend college, becoming a father

may not alter the typical timing of labor market participation. Therefore we might expect the deterrent effect of family background variables that proxy higher educational attainment to be weaker for men than for women after the teenage years. Consistent with this hypothesis, studies of early male fertility indicate that similar variables predict early fertility for women and men, but the associations between individual and family background characteristics and early fertility are somewhat weaker for men than for women (Rindfuss et al. 1988, Hynes et al. 2007).

Because the assumption of rational decision-making may be more applicable to the behavior of adults than that of adolescents, studies on early parenthood focus not only on the role of opportunity costs, but on socialization, social control, stress, and risk preferences as well (Plotnick 1992). Socialization perspectives emphasize the importance of adults, peers and role models for adolescent behavior. Social control perspectives highlight the importance of parental monitoring and supervision (McLanahan and Bumpass 1988), and are particularly salient for adolescents whose parents are employed and have limited time and capabilities for monitoring their children's activities and whereabouts. Stress perspectives suggest that stresses accompanying major life events are critical to adolescent behavior to the extent they change parenting practices or reduce an adolescent's sense of control (Moore et al. 1995, Plotnick 1992, Wu and Martinson 1993). Deviance perspectives propose that a variety of risk-taking behaviors, including sexual behavior, are linked to a number of factors including self-esteem, expectations about the future, and peer affiliations (Scaramella et al. 1998).

Empirically it is often difficult to distinguish between the various theories proposed above. In the demographic literature the different theoretical constructs are often proxied by the same variables because large representative data sets may have a limited set of variables available. For example, a disadvantaged background (e.g., growing up in a single parent family or having parents with low education) could capture low educational aspirations and low wage

prospects or be associated with low levels of monitoring, stressful life events, or living in a neighborhood with peers who are also engaging in risky behavior and becoming parents early. The role of maternal employment during adolescence is also unclear as it may proxy either a positive role model (for girls in particular) or it may indicate limited maternal supervision (which may be particularly salient for boys).

Relationship context of early births

Theories of marriage focus on both economic and cultural factors. Economic theories of marriage predict that marriage is more likely for men with better economic prospects. Wilson (1987) argues that an important factor in the decline of marriage among urban African Americans is the high unemployment rates of African American men, making them less attractive in the marriage market, and providing fewer acceptable partners for African American women. Generally, the literature shows that men with higher earnings are more likely to marry.

In contrast to men, increases in wages and labor market opportunities for women over time have reduced the need for women to marry to obtain economic support provided by a marriage partner. Earlier literature found that women with higher levels of education and earnings were less likely to marry. More recently, however, the data show that highly education women are more likely to marry, but they marry at older ages (Goldstein and Kenney 2001). The positive relationship between education and marriage in recent years is consistent with the increase in positive assortative mating over time (Schwartz and Mare 2005).

Cultural factors and socialization may also play a role in young adults' family formation decisions. The role of childhood socialization is evident in Huang's (2002) findings that adolescents who grow up in a female-headed household or even in a community that has a high percentage of female-headed households are more likely to have a nonmarital birth than a marital birth. Even the general socioeconomic status of the neighborhood appears to influence the

timing of a first premarital birth, particularly for white women (South and Crowder 1999). Qualitative research has revealed a host of non-economic incentives to bear children at an early age. Although marriage continues to be held in high regard, it is not viewed as a prerequisite for childbearing, particularly among low-income couples (Edin and Reed 2005). For these couples, many of whom were raised in single-parent families (Bumpass and Lu 2000), the social status that accompanies the transition to parenthood may influence their family formation decisions (Edin and Kefalas 2005, Schoen and Tufis 2003). Unfortunately the vast majority of both qualitative and quantitative efforts to understand cultural factors in the role of early family formation behaviors are restricted to women, creating a gap in the literature on the influence of social and cultural factors on men's family formation decisions.

The literature that looks at incentives to cohabit is much more recent (Raley 2001, Rindfuss and VandenHeuvel 1990, Sigle-Rushton and McLanahan 2002, Manning and Smock 2005). Three different views of the nature of cohabitation have been suggested. The first models cohabitation as a step toward marriage. In that view, we would expect couples with a premarital pregnancy to marry to legitimize the birth (Manning 1993). The literature suggests that this model is more salient for whites (Manning and Landale 1996). The second view is that cohabitation is an alternative to marriage, in which case, we might expect the factors that affect the likelihood of a cohabiting birth to be similar to those that affect the likelihood of a marital birth. The third view is that cohabitation is an alternative to having a single birth. Parents are cohabiting for convenience or to take advantage of economics of scale in housing, but this does not reflect a long term arrangement. This may be a particularly likely decision for those experiencing an early birth, as these young parents have fewer economic resources. In this case we might expect the factors predicting the likelihood of a cohabiting birth to be similar to those predicting the likelihood of a single birth. An overview of the research on the role of

cohabitation in the U.S. family system concludes that cohabitation is more often practiced as an alternative to marriage for African American women and a precursor to marriage for white women, highlighting the distinct race-ethnic differences in the meaning of cohabitation and family formation decisions (Smock 2000).

Reconciling theories to focus on the relationship context of early births

The literature is clear on the family background factors that predict early fertility, but both theory and empirical studies are less clear on the factors that will predict the relationship context of early births. Our study contributes to this literature by examining early fertility and relationship decisions as jointly determined. The literature suggests that neither cohabitation nor singlehood is a replacement for marriage in terms of family formation (Manning 1993, Manning 1995, Rindfuss and VandenHeuvel 1990, South and Lloyd 1992), but marriage clearly is no longer a social prerequisite for childbearing. Couples often consider their decisions about their relationship context separately from their decisions regarding childbearing (Edin and Kefalas 2005, Reed 2006). Thus it is important to assess whether family background characteristics have differential effects on fertility and relationship context outcomes.

Changes in the relationship context of early births over time

The increase in the proportion of births that occur outside marriage is one of the most drastic social changes of the past few decades. The percentage of births outside marriage has risen dramatically from 11% in 1970 to 37% in 2005 (Ventura and Bachrach 2000, Martin et al. 2007). The relationship context of these births has also changed over time: 40% of births to unmarried women in 1990-1994 were to cohabiting parents, compared to 29% in 1980-1984 (Bumpass and Lu 2000).

Not only are family formation decisions of today's youth different than they were a generation ago, there have also been broad social changes in the background factors associated

with early family formation such as education, family structure, and maternal employment. The percentage of Americans who hold a high school degree has increased over the past half century, and participation in education beyond high school is becoming increasingly common (U.S. Census Bureau 2004). Recent decades have also seen a sharp decline in the percent of children being raised in married, two parent families (Bianchi and Casper 2000). Finally, both single and married mothers increased their participation in the labor force substantially between 1980 and 2002 (U.S. Census Bureau 2004).

Because there have been recent changes both in the relationship context of births and in the individual and family background characteristics that we associate with different family formation decisions, it is difficult to identify which of the trends is driving the changes we have seen in family formation behavior. First, it may be that the relationship between individual and family background characteristics and early births has changed over time. For instance, changes in average levels of maternal education may lead to changes in the relationship between maternal education and early fertility. In particular, the association between very low parental education and early fertility may be stronger for more recent cohorts, since parents who have not completed high school are now a more select and more disadvantaged group than they were in the past. Conversely, parents who have more than a high school education are a less select group, therefore the association between higher education and early fertility may be weaker for more recent cohorts. On the other hand, it may be that the association between particular background characteristics and family formation decisions has not changed, but that the composition of the population has changed and this population change can explain trends in early family formation behavior. For instance, recent increases in the proportion of single parent families may result in the continued growth of single parent families due to intergenerational feedback loops (Bumpass and Lu 2000, Smock 2000).

Scholars have struggled to identify and reconcile the causes, mechanisms, and processes of these changes in family formation behavior. The economic theories discussed above have not been completely successful in explaining the dramatic increase in single parenthood over time (Ellwood and Jencks 2004), and researchers have been particularly challenged to explain the rise in cohabitation, citing theories as diverse as child socialization, social diffusion, cohort replacement, rising individualism, increases in secularism, and changes in sexual behavior norms (for reviews, see Seltzer 2000, Smock 2000). Many of these hypotheses are bolstered by empirical findings, suggesting that there are various, interrelated mechanisms effecting changes in family formation behavior.

The analysis in this paper examines the relationship between family background variables and the likelihood of having a marital, single, or cohabiting first birth (relative to no birth) before age 25. The background variables that we focus on are race/ethnicity, education of the respondent's mother, and respondent's family structure while growing up. We discuss our findings in the context of the theoretical framework outlined above. In particular we contrast the role of variables that are arguably more directly related to economic opportunity (e.g., education) with those that might be more closely associated with differences in culture or norms (e.g., race/ethnicity). In addition, by measuring whether family background characteristics have the same or different effects on fertility in different relationship contexts, we assess the contribution of fertility behavior compared to household formation decisions (marriage and cohabitation) in the outcomes we observe. Finally, we examine whether the association between particular background characteristics and early family formation behavior has changed over time or whether changes in the level of background characteristics in the population help explain changes in observed family formation behavior.

3. Data

We rely on data from three sources: The 1979 National Longitudinal Survey of Youth (NLSY79), the 1997 National Longitudinal Survey of Youth (NLSY97), and the 2002 National Survey of Family Growth (NSFG). These data sets were selected because they provide information on men and women's fertility, marriage, and cohabitation outcomes from large, nationally representative samples. In addition, they provide overlapping information on these outcomes across birth cohorts ranging from 1957 – 1984, allowing us to examine fertility, marriage, and cohabitation over time.

The 1979 and 1997 National Longitudinal Surveys of Youth are cohort data sets, providing large, nationally representative samples of women and men born between 1957 – 1964 (NLSY79) and 1980 – 1984 (NLSY97). Both surveys are prospective, interviewing respondents annually or biennially over time. Both surveys provide extensive information on the sample's family background as well as their family formation behavior. In 2002, respondents in the NLSY79 were ages 38 – 45, while respondents in the NLSY97 were 18 – 22.

The 2002 National Survey of Family Growth, in contrast, is a nationally representative cross-sectional sample of women and men ages 15 – 45. The NSFG, collected by the National Center for Health Statistics, is designed to provide estimates of factors affecting the U.S. birth rate, family formation, and reproductive health among males and females (Abma 2002). Due to the range of birth cohorts in the NSFG (1957 - 1984), the NSFG data overlap perfectly with the NLSY cohorts (NLSY79 is 1957 – 64, NLSY97 is 1980 – 1984). This strategy allows us to compare patterns of early fertility and the relationship context of that fertility over time.

All three data sets include substantial minority over-samples, but we exclude Hispanics from our analysis sample because the Hispanic sample in the NSFG (based on a representative sample of Hispanics ages 15 – 45 in 2002) differs substantially from the sample of Hispanics in

the NLSY panels (based on a representative sample of Hispanics who were teens at the start of each panel).

Measures

The dependent variables in this study are based on the respondent's age at first birth and the relationship context in which that birth occurred. Fertility data is collected differently across the surveys. In the NLSY79 and the NLSY97, respondents are asked at each interview about their fertility behavior. Fertility data is collected separately from information about changes in the respondent's relationship status.[1] In contrast, the NSFG collects male fertility data in the context of relationship data in hopes of eliciting higher reports of non-marital fertility (Lindberg et al. 1998).[2] It is unclear, however, which data set will contain better fertility information, since the NLSY surveys have the advantage of a shorter recall period, while the NSFG survey has the advantage of collecting fertility data in the context of relationship histories.

The relationship context of the birth is also collected differently across the surveys. Marital births in the NLSY79 are identified by comparing the birth date of the first child with dates of marriage and divorce from the marital history data.[3] While the NLSY79 began collecting detailed cohabitation histories later in the panel, cohabitation status at the time of the interview is the only information that is available when these youth were at risk of early births. Due to the low stability of cohabiting unions, we lack adequate detail to accurately identify whether respondents were cohabiting at the time of the birth or not in the NLSY79. The

[1] Considerable attention has been paid to the quality of fertility data in the NLSY79 and to cleaning up the male fertility date (Mott and Gyrn 2001). This study uses variables available in the public-use NLYS79 data to create best estimates of women's age at first birth and data compiled by Mott for male fertility that includes his best estimate of the date of each birth, as well as codes indicating how confident he is that the child is a biological child of the male respondent. We have deleted births from men's fertility records if the paternity confidence code indicates it is "reasonably" and "virtually" certain that the child is not a biological child of the respondent, as we are interested in the transition to biological fatherhood.

[2] There is less concern about women underreporting their fertility, so fertility questions are not asked in the context of relationship data. Instead, information about births is collected as part of complete pregnancy histories.

[3] Respondents who reported being separated at the time of the birth are coded as non-marital births. Cases with incomplete marital history information (eg. a birth between the start of a marriage and a report at an annual interview of separation but no separation date) were coded with the marital status closest in time to the birth.

NLSY97 collects complete marital and cohabitation histories, and created variables in the data file indicate the respondent's marital and cohabitation status in each month since the age of 16. The relationship context of the birth is identified by the marital or cohabitation status in the month the child was born.[4] In the NSFG, information about fertility and the relationship context of the birth in the NSFG are collected differently for men and women. Men are asked about fertility in the context of relationship histories, and fathers are asked a direct question about whether the parents were married, cohabiting, or single at the time of each birth. While this method avoids problems of misclassification due to errors in reporting dates of events, it is subject to desirability bias, if respondents perceive births in a marital or cohabiting context as being more socially acceptable. In contrast, for NSFG women, fertility, marriage, and cohabitation histories are collected separately, and the relationship context of the birth is determined in a similar way to the NLSY97 by comparing dates.

We use two different dependent variables in our analysis. First, we create a variable indicating whether the respondent had no birth, a non-marital first birth, or a marital first birth at each age. Analyses for this dependent variable are based on all three data sets. Second, we created a more detailed measure of relationship context, breaking the non-marital birth category down further to indicate whether the birth was to a single or cohabiting mother. These analyses are based on the NSFG and the NLSY97 as we can more accurately measure cohabitation in these surveys.

Because of our interest in having nationally representative data spanning from the 1970s until today, the multivariate models in this analysis rely on family background characteristics that are likely to be associated with early family formation decisions and that are available in all

[4] The NLSY97 collects information about the month and year, but not the day, of a give marital or cohabitation change, so there is some ambiguity about the sequencing of events that occur within a month of the birth. Given that uncertainty, we also classify a birth as marital if the parent got married in the month immediately following the birth.

three data sets. Due to well-documented differences in family formation behavior by race/ethnicity, we include an indicator for race (1 = non-Hispanic African-Americans, 0 = non-Hispanic Whites).[5] The education of the respondent's mother (or mother-figure in the NSFG) is measured by a categorical variable (1 = less than a high school education, 2 = high school degree or GED, 3 = more than a high school education). The respondent's family structure at age 14 is coded as follows: 1 = respondent lived with both biological parents, 2 = respondent lived with one biological parent and a step-parent, 3 = respondent lived with a single parent, and 4 = respondent lived with neither biological parent.[6] Analyses include a dummy variable indicating whether the respondent is foreign born, and another indicating whether the respondent's mother (or other adult female figure in the household) was employed when the respondent was 14.[7] We also include a variable indicating the calendar year of the respondent's birth which ranges from 1957 - 1984. In our multivariate models this variable has been rescaled to range from 0 – 20.

Descriptive statistics for all analysis variables are presented in Table 1.

[TABLE 1 ABOUT HERE]

4. Methods

We estimate a series of discrete time event history models. All three data sets contain the same variables and data structure and all three have been merged together into one data file with dummy variables indicating which data set the observations come from. To answer our initial research question about whether the same variables that predict early first births also help us differentiate between the relationship context of these early first births, we estimate two multinomial logit models. Our cohort analyses are extensions of this basic model and will be described below. The data are arrayed in person-year format. Respondents are included in the

[5] This group also includes 'other' races.
[6] In the NLSY97, family structure and maternal employment were measured at the first interview, when respondents were between the ages of 12 – 17.
[7] In the NSFG the question is about usual employment "when you were growing up, that is when you were between the ages of 5 and 15".

data set multiple times beginning in the year they are age 15 until the year they have a first birth (or, if we do not observe a birth, until the year they turn age 24 or the last interview, whichever is earlier). In our first set of analyses, the dependent variable is a three level categorical variable indicating whether no birth occurred in that year (the omitted category), a marital birth occurred, or a non-marital birth occurred. The second set of analyses uses a four level categorical variable indicating no birth, single birth, cohabiting birth, or marital birth.[8] These specifications allow us to interpret the results as a discrete time competing risk hazard model.

In addition to the substantive predictors outlined above, our models include several variables. To specify the underlying hazard, we include a categorical variable for the respondent's age in each year (15 – 17 (omitted), 18 – 19, 20 – 22, 23 – 24), a linear calendar year variable, and interactions between the age variables and calendar year.[9] We also include several missing data flags. Missing data was handled as follows: for variables with greater than 5% of the cases in a dataset missing, a missing data category was added to the independent variable. For variables with fewer than 5% of the cases missing in a data set, a general imputation flag was coded 1 and the modal category was imputed for the case. Dummy variables for the NLSY79 and NLSY97 are included to control for differences in data collection between data sets.

To answer our second research question about whether there are cohort differences in the effects of background characteristics on early family formation behaviors, we estimate a series of models that include interactions between characteristics of interest and our linear calendar year of birth measure. Using chi-square tests of goodness of fit, we examine whether the addition of each set of interaction terms significantly improves the model. Appendix B shows the model

[8] In the second set of analyses single and cohabiting births are mutually exclusive categories that combined are the same as non-marital births in the first set of analyses.
[9] We tested various specifications of age and calendar year to determine the best model fit.

building process, including coefficients for added interaction terms and indicating which models represent a significant improvement over the baseline. If at least one interaction term in a given set of variables (e.g., less than high school education times year of birth) is significant in at least one of the contrasts (e.g., marital versus cohabiting birth), the set is included in a final model. To visually display the magnitude of changes over time in the effects of family background characteristics on early family formation behavior, we present graphs of the predicted relative odds of experiencing various family formation outcomes, based on these final interaction models. We use a logarithmic scale for the graphs of relative odds to take into account the assymetric nature of odds ratios (Galbraith 1988). For instance, an odds ratio of 2 is equivalent in absolute value to an odds ratio of .5, yet their distance of these points from 1 is different when displayed on a linear scale.

To answer our third question about whether changes in the level of background characteristics explain changes in early family formation behavior, we use simulation techniques to estimate the predicted distribution of early family formation behaviors under varying sets of assumptions. For this exercise we use regression coefficients from a model that interacts cohort with age and race, with the coefficients for the other characteristics constrained to be the same across cohorts. We generate four sets of predicted probabilities for women ages 15 – 19 to illustrate our main findings. First, we set the values of the independent variables (including the calendar year of birth variable that strongly predicts family formation) to match the population characteristics in the NLSY79 data set, showing the predicted probability of having no birth, a non-marital birth, and a marital birth for that cohort. Second, we set the values of the independent variables to match the population in the NLSY97 data set, to show the probability of family formation behaviors today. We then examine what the distribution of family formation behaviors would be like if the relationships between background characteristics and family

formation were constant over time but if the population had the education level of the 1979 cohort. We repeat this for family structure. These analyses show the magnitude of change in family formation due to underlying demographic changes in the population. The results from this simulation exercise should be considered preliminary.

4. Results

Differentiating between predictors of early first births and the relationship context of these births

Table 2 shows results from multinomial logit models predicting the likelihood of having a non-marital or marital birth versus no birth, and the likelihood of having a non-marital versus a marital birth. Some background characteristics are clearly associated with a greater likelihood of having an early non-marital birth. As other research has shown, African-American women and men are more likely than whites to have early first births, and those births are significantly more likely to be non-marital than marital. In addition, young women and men who lived in a single parent household at age 14 are more likely than those living with two parents to have an early non-marital first birth. Some results differ slightly for women and men. For women, foreign born youth are less likely than native born youth to have an early non-marital birth than to have a marital birth or no birth, whereas foreign born men are less likely than native born men to have any birth regardless of the relationship context of that birth. For men, having an employed mother at age 14 is associated with a lower likelihood of having an early non-marital birth (though the magnitude of this effect is small), but there are no significant effects of maternal employment for women.

[TABLE 2 ABOUT HERE]

In contrast, other family background characteristics are associated with having an early first birth but *do not* distinguish between whether that birth will be in a marital or non-marital relationship. For both women and men, lower maternal education is a good predictor of the

likelihood of having an early first birth (columns 1, 2, 4, and 5) but does not differentiate between whether that early first birth will be marital or non-marital (columns 3 and 6). Living in a step-family at age 14 (compared to living with in an intact family) is also associated with having an early birth, but does not differentiate between whether that birth will be non-marital or marital.

Tables 3a and 3b shows results of multinomial logit models that further break the non-marital birth category into single versus cohabiting births. Table 3a shows results of multinomial logit models with "no birth" as the omitted category. Table 3b shows further specifications of these models that highlight differences between relationship contexts, in particular, between single and cohabiting births.

[TABLES 3a and 3b ABOUT HERE]

For some background characteristics, this further division is informative. In particular, compared to whites, early first births to African-American women and men are more likely to be to single parents than to cohabiting parents. And African-American women and men are much less likely than whites to have early marital births.

The relationship between family structure in adolescence and the relationship context of early first births again depends on the type of family structure. Non-marital births for women living in a step-parent family at age 14 are more likely to be in cohabiting compared to single contexts. This association was not clear in the analyses that combined single and cohabiting births into a non-marital birth category in Table 2. For men, the coefficient is in the same direction as for women but is not large enough to reach statistical significance.

While maternal education was not associated with general differences between marital and non-marital births in Table 2, breaking relationship context down further nets some useful information. Compared to men whose mothers have some higher education, men whose mothers

have a high school degree are slightly more likely to have early cohabiting or marital births than single births. These effects are small, however, which is likely why differences were not detected in Table 2 between marital and non-marital births. Similar to our earlier results, maternal education does not appear to predict the relationship context of early first births for women.

Maternal employment in adolescence is associated with different relationship context outcomes for women and men. For men, maternal employment during adolescence is, if anything, associated with a lower likelihood of having an early birth. Conditional on having an early first birth, men whose mothers were employed during adolescence are slightly more likely to have early cohabiting or marital births than single births (compared to men whose mothers were not employed). This finding is in contrast to results for women, and the sex difference is statistically significant. For women, maternal employment in adolescence is not clearly predictive of early births, but when there is a birth, women whose mothers worked are more likely to have single instead of marital births compared to women whose mothers did not work.

Breaking down the non-marital category into single and cohabiting does not provide us with additional information about the relationship context of births to foreign born youth. Similar to results in Table 2, the important distinction for these youth is between marital and non-marital births.

Changes over time in early family formation

As other research has shown, the most notable fact about the relationship contexts of first births is how much they have changed over time. Using data on our sample of white and African-American adults from the NSFG, Figure 1 shows that of men with a first birth between ages 15 – 24, the proportion that were non-marital increased from 43% to 71% from our earliest (1957-64) to our latest (1980-84) birth cohort. Similarly, the percent of non-marital births that

were to cohabitors increased from 37% for men born between 1957 and 1964 to 57% for men born between 1987 and 1984. The trends for women are similar, but the proportions of both non-marital and cohabiting births are lower. The proportion of non-marital to all first births increased from 37% for the oldest cohort of women to 65% for the youngest cohort, and the proportion of non-marital births to cohabitors increased from 14% to 32%. It is perhaps not surprising that a higher proportion of births are non-marital for the men in our sample, because men tend to be partnered with younger women, and we know that non-marital births are more likely for younger women (NCHS 2000 report).

Our earlier results about the associations between background characteristics and family formation behavior were based on a data set that combines individuals from birth cohorts spanning from the 1950s through the 1980s. Appendix tables B, C, and D examine whether there have been changes over time in the association between these family background characteristics and early fertility behavior (B focuses on marital versus non-marital births for women and men, C explores the further distinction between single and cohabiting births for women, and D explores single and cohabiting births for men). To ease interpretation of our results, we present graphs of the relative odds of having various birth outcomes over time, for background characteristics that are significant in the final models (Model 6 for women and Model 7 for men). Note that these models are based only on data from the NSFG and the NLSY97 as we have not used cohabitation data from the NLSY79.

As other research has shown, the gap in family formation behavior between whites and African-Americans has closed over time. Patterns over time indicate that African-American women and men are still far more likely to have non-marital births compared to no birth than whites and that the odds of having a non-marital versus a marital birth have increased for both racial groups over time. But the odds of having a non-marital birth versus a marital birth have

increased faster for whites than they have for African-Americans. Figure 3 shows this pattern for men; the closing of the racial gap is also significant (though slightly smaller in magnitude) for women.

[FIGURES 3 and 4 ABOUT HERE]

In our analyses we observe some other significant differences in associations between family background and the relationship context of early births, however in the magnitude of these effects is substantively small compared to the unexplained, overall time trend toward non-marital births. When we do observe these differences, they tend to support McLanahan's thesis about the diverging destinies of advantaged and disadvantaged members of our society. For instance, the relative odds of having a non-marital early birth increases for women with mothers of all educational backgrounds, but it increases more rapidly for those whose mothers had less than a high school education compared to those whose mothers have some college education (Figure 4). Similarly for men, those in non-traditional family structures experience a faster rate of increase in their odds of experiencing a non-marital birth versus a marital birth, compared to those in two parent families (Figure 5). When we move on to examining changes over time specifically related to cohabitating versus single births, we see similar patterns. For white women, the relative odds of having a cohabiting versus a single birth increases substantially over time, but for African-American women, this relationship has not changed over time (Figure 6). Overall, our results indicate that the effect of family background characteristics such as family structure, maternal education, and maternal on the relationship context of early births has not changed in a major way over time. The overall cohort effect is driving the observed changes and is not explained by the variables in the model.

[FIGURES 5 and 6 ABOUT HERE]

Our last set of analyses examines whether changes in the underlying population's demographics can explain changes in patterns of family formation, particularly in the relationship context of early births. Figure 7 shows results from our simulation analysis. These results indicate that over time the predicted probability of having a marital versus non-marital birth has changed substantially (the first two bars). Changing today's population to have the maternal education of the population born in 1957 – 64 would change the predicted proportion of young women experiencing an early first birth. But changing today's population to have the family structure or maternal education as the population born in 1957 – 64 would not substantially alter the proportion of those with an early birth who had a non-marital birth (the second two bars, which calculate to 12 – 14% marital births for both bars). Thus the changes we have experienced in the family structure and maternal education levels over the past generation do not appear to be driving the high rate of non-marital births observed today.

[FIGURE 7 ABOUT HERE]

Discussion

There have been tremendous changes in the family formation behavior of young adults over the past thirty years, and researchers and policy-makers are striving to understand the causes of these changes. Our paper contributes to this topic in several ways. First, to develop appropriate policy interventions, it is critical to understand whether background characteristics are primarily related to early fertility or to decisions about the relationship context in which an early birth occurs. To address that question our research highlights several categories of background characteristics: race, economic opportunities (proxied by maternal education), and family processes (e.g., family structure and mother's work behavior).

Along with many others, we find that race is strongly associated both with having an early birth and with having a non-marital birth for males and females. Economic opportunity as

proxied by maternal education is a strong predictor of early fertility. Indeed, according to our simulation results, we might see more early first births if not for the changes in maternal education that have occurred over the past thirty years. Women from more advantaged backgrounds are more likely to delay their fertility in order to complete their education and start careers (Goldstein & Kenney 2001). However, maternal education is not strongly associated with the relationship context of early births. One possible explanation for our education finding is that the opportunity cost of fertility is similar for married and non-married young women. This explanation is consistent with the fact that labor force participation rates have converged over time for married and non-married women. We have similar findings about education for men, but the explanation for those findings may differ. In particular, because men are less likely to be the primary caretakers of children, the opportunity cost of fatherhood may be small and independent of whether or not the man is married.

In contrast to the results for race and maternal education, the results for the family structure variables are mixed and harder to interpret. For example, living in a single parent household at age 14 is associated with early non-marital births (both single and births in the context of cohabitation) for men and women, but does not increase early marital births. However, growing up in a step parent household increases both early non-marital and marital births. There is also some evidence for women that this is associated with higher rates of births occurring in a cohabiting union, (though the magnitude of this effect is small) and there is not a clear association with cohabitation for men. Another family process variable, mother's employment status when the young adult was 14, also has results that differ by gender. Specifically, there is some evidence that young men with working mothers are more likely to cohabit than be single, whereas young women are more likely to have a single birth rather than a married birth. Overall, it is not clear whether the mixed results we have found for the predictors

of relationship context (especially cohabitation) are because choices about relationships are more idiosyncratic and thus more difficult to predict, or whether data on relationship status is noisier.

Another contribution of the paper is to examine factors that may account for differences in family formation behavior over time. Our results show that there have been substantial changes in the role of race over time, with trends showing a convergence in non-marital childbearing rates for whites and African-Americans, but a divergence in the share of non-marital childbearing that occurs to cohabiting parents. Other than race, we find that changes over time in the association between family background characteristics and our fertility and relationship context outcomes are small. Finally, our simulations indicate that changes in the levels of education over time have substantial effects on the likelihood of any early birth, but no effect on the relationship context of those births. In contrast changes in our family process variables over time have significant effects in our regressions, but their impact on time trends in the relationship context of births is very small.

Overall our results indicate that maternal education is a decent predictor of whether a young adult will have an early birth but is not a clear predictor of the relationship context of that birth. And while family structure at age 14 is a significant predictor of early births and their relationship context, the magnitude of changes in family structure in the overall population on time trends in early family formation behavior is quite small. Thus when we separate out early fertility from early relationship context decisions, we see that variables proxying both economic opportunities (maternal education levels) and family processes (family structure in adolescence) are not driving the major changes in the relationship context of these early births. There are two plausible reasons for this. First, the variables in this paper may be less nuanced than is necessary to detect these effects. Second, particularly today, it may be that relationship decisions for young adults are relatively fleeting and fluid. If young adults are moving in and out of single,

cohabiting, and even marital relationships over time (as other researchers have shown), predicting which status a young parent will hold at a given time may be challenging.

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Figure 1. Percent with Different Birth Outcomes: Black and White Women from the NSFG (25 or Older at '02 Interview)

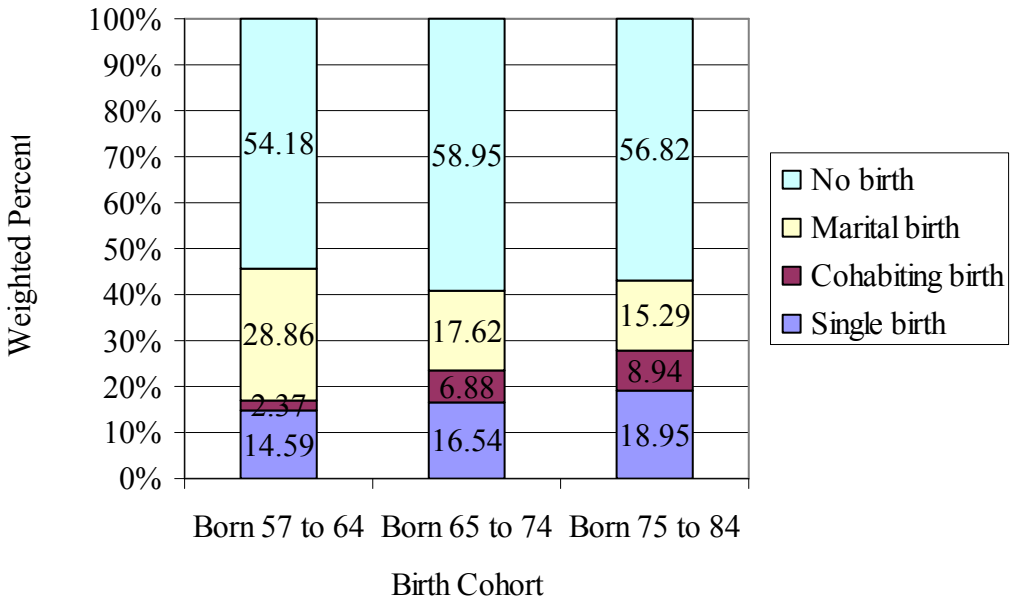

Figure 2. Percent with Different Birth Outcomes: Black and White Men from the NSFG (25 or Older at '02 Interview)

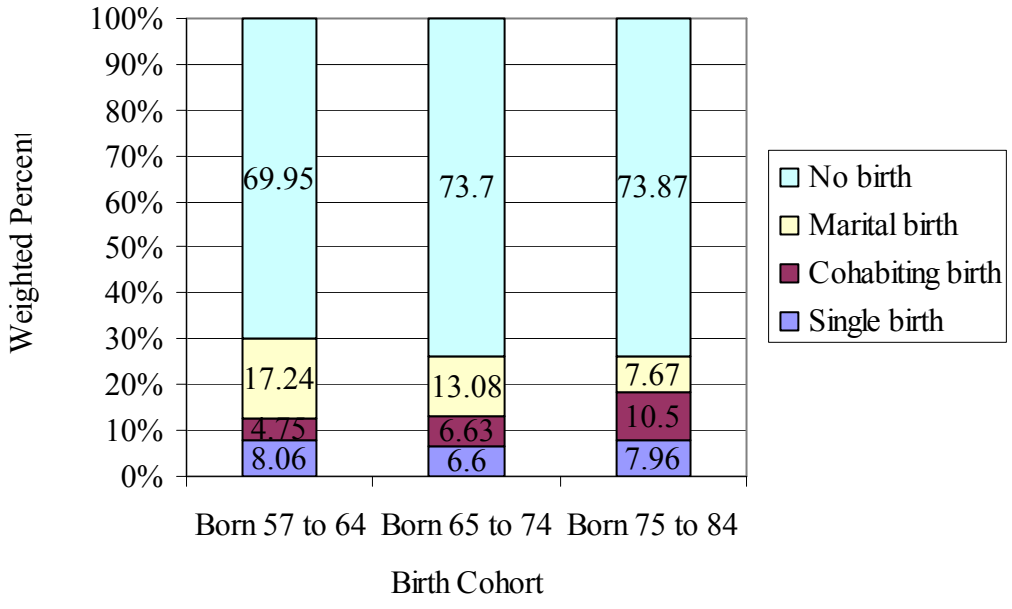

Figure 3. Relative Odds of Nonmarital Versus Marital Birth, by Race: Men (Evaluated at Age 18-19)

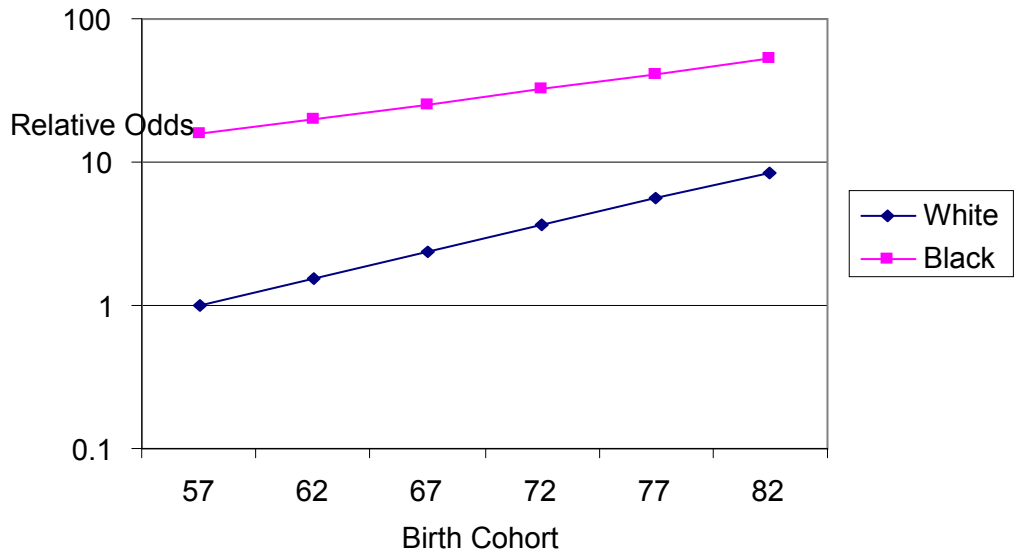

Figure 4. Relative Odds of Nonmarital Versus Marital Birth, by Education: Women (Evaluated at Age 18-19)

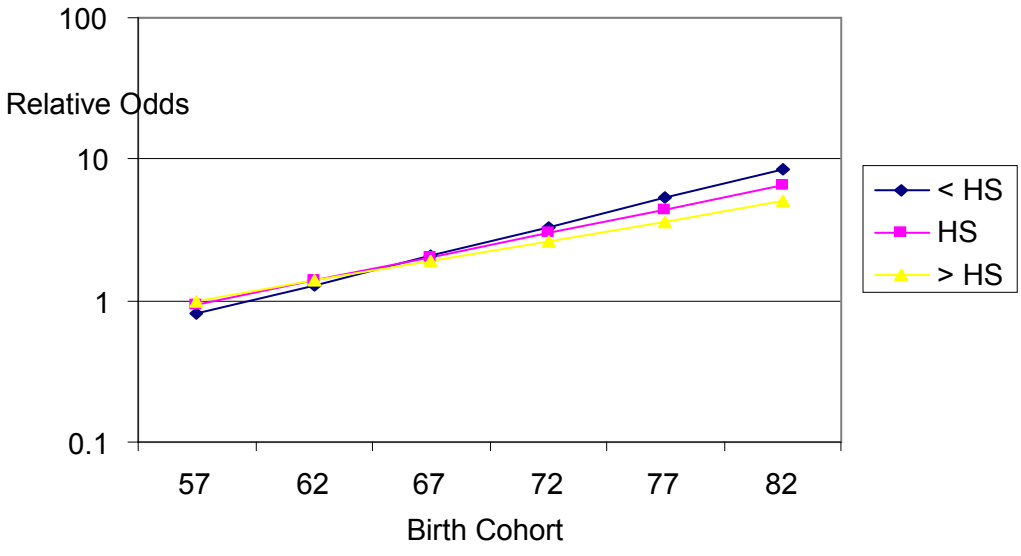

Figure 5. Relative Odds of Nonmarital Birth Versus No Birth, by Family Structure: Men (Evaluated at Age 18-19)

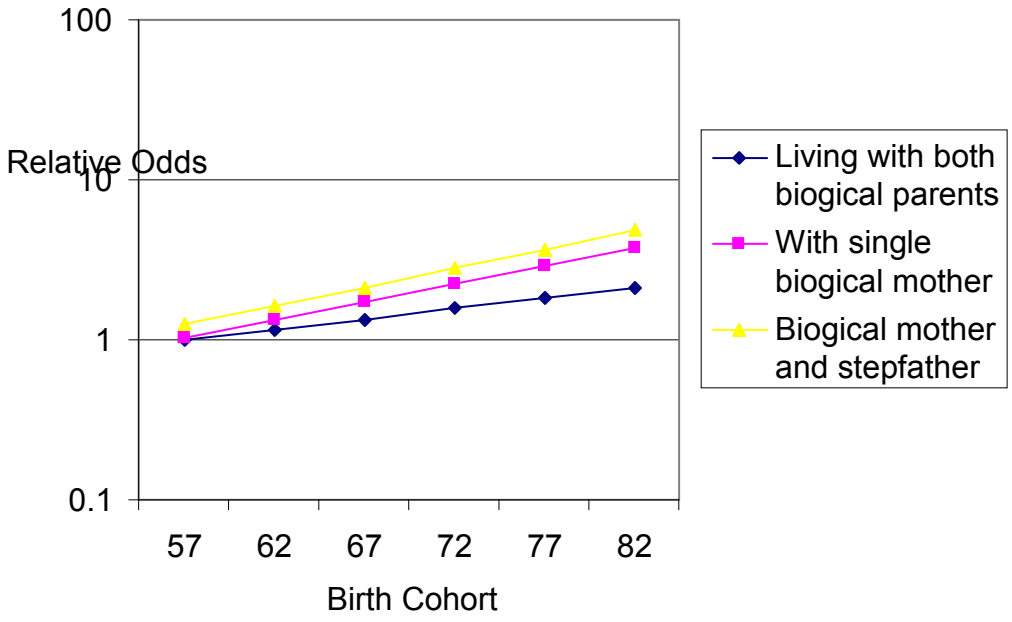

Figure 6. Relative Odds of Cohabiting Birth Versus Single Birth, by Race: Women (Evaluated at Age 18-19)

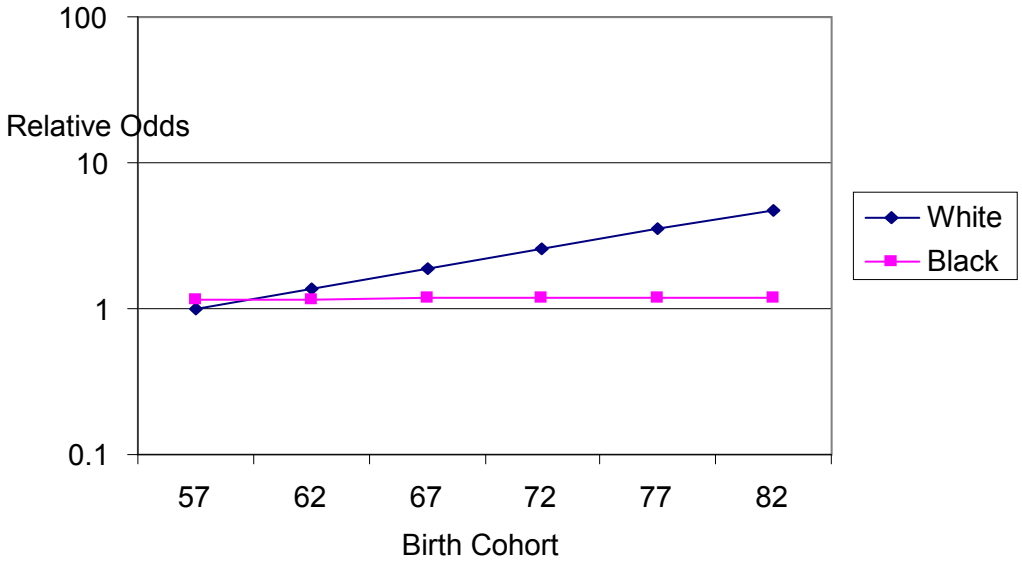

Figure 7. Simulations of Different Birth Outcomes (Ages 15-19) Based on Models of Black and White Women

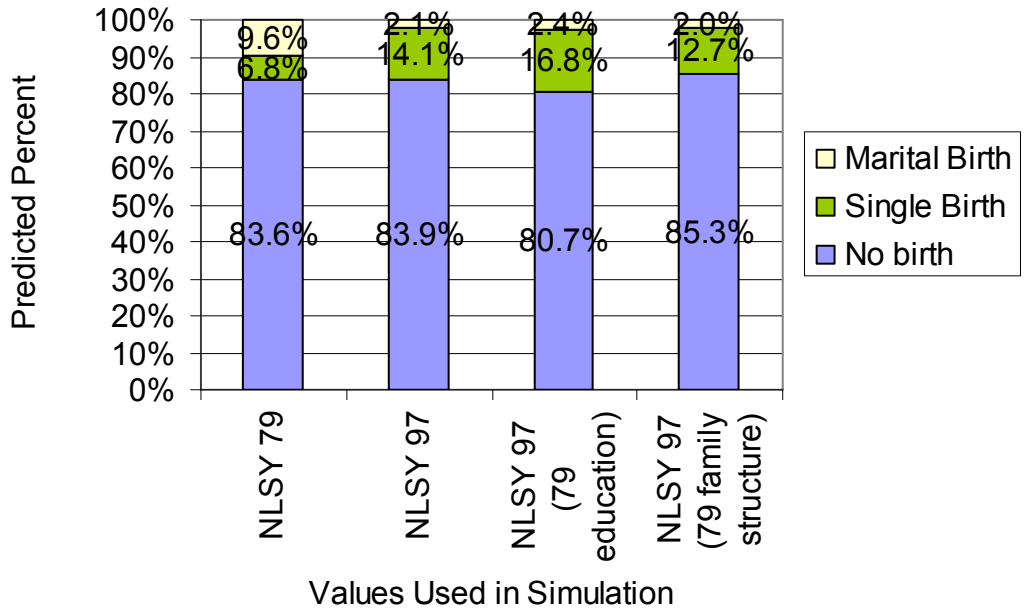

Table 1.

Descriptive statistics for analysis variables, by data set and sex

	Women			Men		
	79	NSFG	97	79	NSFG	97
Birth Outcome at Age of Censoring						
No birth	0.544	0.620	0.769	0.699	0.769	0.880
Nonmarital birth	0.157	0.201	0.157	0.107	0.120	0.099
Single birth	---	0.148	0.126	---	0.064	0.063
Cohabing birth	---	0.053	0.066	---	0.056	0.036
Marital birth	0.299	0.179	0.039	0.194	0.111	0.021
Age of Censoring	22.161	22.005	19.324	23.134	22.746	19.560
Calendar Year of Respondent Birth	60.443	70.248	81.979	60.519	70.420	81.997
African American	0.148	0.161	0.176	0.144	0.139	0.178
Maternal Education						
Less than high school	0.299	0.180	0.118	0.257	0.141	0.117
High school degree	0.447	0.394	0.319	0.474	0.423	0.325
Some college	0.207	0.419	0.436	0.213	0.433	0.429
Missing education	0.047	0.000	0.127	0.055	0.000	0.129
Adolescent Family Structure						
Living with both biogical parents	0.748	0.721	0.526	0.765	0.740	0.556
With single biogical mother	0.143	0.138	0.292	0.133	0.136	0.272
Biogical mother and stepfather	0.083	0.098	0.141	0.077	0.092	0.134
Other family structure	0.026	0.043	0.041	0.025	0.032	0.038
Foreign Born	0.029	0.088	0.023	0.025	0.086	0.025
Adolescent Maternal Employment						
Mother not employed	0.451	0.299	0.247	0.474	0.309	0.248
Mother employed	0.549	0.701	0.680	0.526	0.691	0.679
Missing data on maternal employment	0.000	0.000	0.073	0.000	0.000	0.073
Imputation Flag	0.016	0.020	0.003	0.025	0.025	0.003
N of respondents	3,919	5,597	3,370	3,882	3,377	3,550

Sources: National Longitudinal Survey of Youth 1979 and 1997, 2002 National Survey of Family Growth.
Notes: All descriptive statistics are weighted. Sample includes all individuals in the multinomial logit models that follow. Sample does not include Hispanics because Hispanic sample differs substantially between the NLSY surveys and the NSFG.

Table 2.
Multinomial logit results for factors associated with no birth, non-marital birth, and marital birth, for women and men in a data set combining NLSY79, NLSY97 and NSFG

	Women						Men					
	1		**2**		**3**		**4**		**5**		**6**	
	Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth		Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth	
African American	1.211	***	-0.608	***	1.819	***	1.426	***	-0.824	***	2.250	***
Less than high school (vs some college)	1.012	***	0.956	***	0.056		0.825	***	1.043	***	-0.218	
High school degree (vs some college)	0.571	***	0.503	***	0.069		0.483	***	0.589	***	-0.106	
Missing education (vs some college)	0.763	***	0.729	***	0.034		0.824	***	0.831	***	-0.008	
Single biogical mother (vs two biological)	0.466	***	0.013		0.453	***	0.274	***	-0.198		0.472	***
Biomother and stepfather (vs two biological)	0.620	***	0.462	***	0.158		0.524	***	0.522	***	0.002	
Other family structure (vs two biological)	0.678	***	0.329	**	0.350	*	0.229	*	0.247		-0.018	
Foreign born	-1.123	***	-0.118		-1.006	***	-0.690	***	-0.509	**	-0.181	
Mother employed	0.035		0.045		-0.010		-0.142	*	0.029		-0.172	
Maternal employment missing	-0.320	*	0.022		-0.342		-0.162		-0.081		-0.081	
Calendar Year of Respondent Birth (0-27)	0.079	***	0.022	*	0.058	***	0.076	***	0.016		0.060	***
Age 15-17 of risk (vs 23-24)	0.241		-1.396	***	1.637	***	-0.738	***	-2.890	***	2.151	***
Age 18-19 of risk (vs 23-24)	0.680	***	-0.330	**	1.010	***	0.400	**	-1.135	***	1.534	***
Age 20-22 of risk (vs 23-24)	0.377	**	-0.104		0.481	**	0.683	***	-0.273	*	0.956	***
Age 15-17 times calendar year	-0.064	***	-0.099	***	0.036	*	-0.072	***	-0.195	**	0.123	*
Age 18-19 times calendar year	-0.043	***	-0.059	***	0.016	*	-0.065	***	-0.068	***	0.003	
Age 20-22 times calendar year	-0.020		-0.023	*	0.003		-0.067	***	-0.052	***	-0.016	
NLSY97	-0.301	***	-0.224		-0.077		0.232	*	0.460	*	-0.228	
NLSY79	-0.063		0.353	***	-0.416	***	0.021		0.435	***	-0.414	**
Imputation flag	0.593	***	0.037		0.556	*	0.501	***	-0.034		0.535	*
Intercept	-5.339	***	-3.682	***	-1.657	***	-5.505	***	-4.011	***	-1.494	***
Likelihood Ratio	10335		10335		10335		6343.2		6343.2		6343.2	
N of person years	90,386		90,386		90,386		80,753		80,753		80,753	

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Table 3a.
Multinomial logit results for factors associated with different relationship contexts compared to no birth for women and men in a data set combining NLSY79, NLSY97 and NSFG

	Women						Men					
	Single vs No Birth		Cohab vs No Birth		Marital vs No Birth		Single vs No Birth		Cohab vs No Birth		Marital vs No Birth	
African American	1.327	***	0.273	**	-0.581	***	1.491	***	0.521	***	-0.607	***
Less than high school (vs some college)	0.930	***	1.032	***	0.822	***	0.601	***	1.238	***	0.951	***
High school degree (vs some college)	0.563	***	0.534	***	0.385	***	0.344	**	0.627	***	0.578	***
Missing education (vs some college)	0.497	**	0.595	**	0.314		0.595	**	0.360		-0.159	
Single biogical mother (vs two biological)	0.423	***	0.516	***	0.068		0.453	***	0.408	**	0.115	
Biomother and stepfather (vs two biological)	0.369	***	0.963	***	0.439	***	0.677	***	0.903	***	0.681	***
Other family structure (vs two biological)	0.551	***	1.131	***	0.202		0.386	*	0.496	*	0.034	
Foreign born	-1.054	***	-1.317	***	-0.143		-0.833	**	-0.621	*	-0.501	*
Mother employed	0.095		-0.071		-0.117		-0.287		0.110		0.017	
Maternal employment missing	-0.185		-0.086		0.198		-0.236		0.558		0.611	
Calendar Year of Respondent Birth (0-27)	0.064	***	0.088	***	0.039	***	0.055	*	0.149	***	0.032	
Age 15-17 of risk (vs 23-24)	0.208		-0.593		-1.193	***	-0.812		-0.651		-1.741	**
Age 18-19 of risk (vs 23-24)	0.690	**	0.119		-0.005		0.572		1.302	*	-0.541	
Age 20-22 of risk (vs 23-24)	0.384		-0.351		-0.105		0.662		1.462	**	-0.123	
Age 15-17 times calendar year	-0.049	**	-0.051		-0.112	***	-0.036		-0.141	***	-0.252	***
Age 18-19 times calendar year	-0.041	*	-0.013		-0.079	***	-0.047		-0.145	***	-0.103	***
Age 20-22 times calendar year	-0.021		0.020		-0.027		-0.052		-0.123	***	-0.067	**
NLSY97	-0.194	*	-0.442	***	-0.295	*	0.345	*	0.013		0.509	*
Imputation flag	0.775	***	0.743	**	0.057		0.354		1.157	***	-0.168	
Intercept	-5.537	***	-6.243	***	-3.691	***	-5.959	***	-7.226	***	-4.259	***
Likelihood Ratio	8793.6		8793.6		8793.6		4644.1		4644.1		4644.1	
N of person years	59,880		59,880		59,880		46,513		46,513		46,513	

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Table 3b.
Multinomial logit results for factors associated with different relationship contexts conditional on having a birth for women and men in a data set combining NLSY79, NLSY97 and NSFG

	Women						Men					
	Single vs Cohab Birth		Marital vs Cohab Birth		Single vs Marital Birth		Single vs Cohab Birth		Marital vs Cohab Birth		Single vs Marital Birth	
African American	1.054	***	-0.855	***	1.909	***	0.970	***	-1.128	***	2.098	***
Less than high school (vs some college)	-0.102		-0.210		0.108		-0.638		-0.287		-0.351	
High school degree (vs some college)	0.029		-0.149		0.179		-0.284	**	-0.050		-0.234	
Missing education (vs some college)	-0.098		-0.281		0.183		0.235		-0.519		0.753	
Single biogical mother (vs two biological)	-0.093		-0.448	**	0.355	**	0.045		-0.293		0.338	
Biomother and stepfather (vs two biological)	-0.594	***	-0.524	***	-0.070		-0.226		-0.222		-0.004	
Other family structure (vs two biological)	-0.580	**	-0.930	***	0.349		-0.111		-0.463		0.352	
Foreign born	0.264		1.174	***	-0.911	***	-0.212		0.120		-0.333	
Mother employed	0.166		-0.046		0.212	*	-0.396	*	-0.093		-0.304	
Maternal employment missing	-0.099		0.284		-0.383		-0.794		0.053		-0.847	
Calendar Year of Respondent Birth (0-27)	-0.024		-0.049		0.025		-0.095	*	-0.117	***	0.023	
Age 15-17 of risk (vs 23-24)	0.800		-0.601		1.401	***	-0.161		-1.090		0.930	
Age 18-19 of risk (vs 23-24)	0.572		-0.124		0.696	*	-0.730		-1.843	**	1.113	*
Age 20-22 of risk (vs 23-24)	0.735		0.246		0.488		-0.800		-1.584	**	0.785	
Age 15-17 times calendar year	0.002		-0.061		0.063	*	0.105	*	-0.111		0.215	**
Age 18-19 times calendar year	-0.029		-0.066	*	0.038		0.098	*	0.042		0.056	
Age 20-22 times calendar year	-0.041		-0.047		0.006		0.072		0.057		0.015	
NLSY97	0.248		0.147		0.101		0.331		0.496		-0.165	
Imputation flag	0.032		-0.686		0.718	*	-0.803		-1.325	**	0.522	
Intercept	0.706		2.552	***	-1.846	***	1.267	*	2.967	***	-1.700	***
Likelihood Ratio	8793.6		8793.6		8793.6		4644.1		4644.1		4644.1	
N of person years	59,880		59,880		59,880		46,513		46,513		46,513	

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Appendix A.
Coefficients based on Discrete-Time Multinomial Logistic Regression Models of Nonmarital Birth Outcomes: Non-Hispanic Women and Men from the NSFG and NLSY97

	Women						Men					
Variables	Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth		Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth	
African American	1.050	***	-0.579	***	1.629	***	1.116	***	-0.603	***	1.718	***
Less than high school (vs some college)	0.963	***	0.821	***	0.142		0.849	***	0.949	***	-0.099	
High school degree (vs some college)	0.558	***	0.385	***	0.174		0.453	***	0.577	***	-0.124	
Missing education (vs some college)	0.530	***	0.312		0.219		0.586	***	-0.154		0.740	
Single biogical mother (vs two biological)	0.452	***	0.068		0.384	**	0.451	***	0.116		0.336	
Biomother and stepfather (vs two biological)	0.559	***	0.436	***	0.123		0.769	***	0.679	***	0.090	
Other family structure (vs two biological)	0.700	***	0.199		0.501	**	0.437	***	0.033		0.403	
Foreign born	-1.118	***	-0.143		-0.975	***	-0.738	***	-0.501	*	-0.238	
Mother employed	0.053		-0.117		0.170		-0.145		0.016		-0.160	
Maternal employment missing	-0.150		0.198		-0.348		-0.018		0.604		-0.622	
Calendar Year of Respondent Birth (0-27)	0.072	***	0.039	**	0.033		0.102	***	0.032		0.070	**
Age 15-17 of risk (vs 23-24)	0.062	***	-1.193	*	1.255	***	-0.719		-1.742	**	1.023	
Age 18-19 of risk (vs 23-24)	0.555		-0.005		0.560		0.905	**	-0.542		1.446	**
Age 20-22 of risk (vs 23-24)	0.205		-0.104		0.309		1.056	**	-0.123		1.179	**
Age 15-17 times calendar year	-0.052	***	-0.112	***	0.059	*	-0.081	***	-0.252	***	0.171	*
Age 18-19 times calendar year	-0.035	*	-0.079	***	0.044	*	-0.094	***	-0.103	***	0.008	
Age 20-22 times calendar year	-0.010	***	-0.027		0.017		-0.091	***	-0.067	***	-0.024	
NLSY97	-0.261	***	-0.294	*	0.032		0.219		0.511	*	-0.292	
Imputation flag	0.774	***	0.057		0.717	*	0.769	***	-0.172		0.941	*
Intercept	-5.134	***	-3.691	***	-1.443	***	-5.808	***	-4.256	***	-1.552	***
Likelihood Ratio	7197.5		7197.5		7197.5		3838.5		3838.5		3838.5	
N of person years	59,880		59,880		59,880		46,513		46,513		46,513	

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Appendix B.

Coefficients based on Discrete-Time Multinomial Logistic Regression Models of Nonmarital Birth Outcomes

	Women							Men						
Variable times calendar year	Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth		Tests of global fit	Nonmarital Birth vs No Birth		Marital Birth vs No Birth		Nonmarital vs Marital Birth		Tests of global fit
Model 1: Baseline plus:														
African American	-0.037	***	-0.020	*	-0.017		***	-0.038	***	-0.002		-0.036	*	***
Model 2: Baseline plus:														
Less than high school	-0.004		-0.023	*	0.019		*	-0.010		0.011		-0.020		
High school degree	0.000		-0.010		0.010			-0.012		-0.016		0.004		
Model 3: Baseline plus:														
Single biogical mother	-0.002		-0.002		-0.001			0.011		0.023		-0.012		
Biomother and stepfather	-0.005		0.003		-0.008			0.021	*	-0.006		0.026		
Model 4: Baseline plus:														
Foreign born	-0.014		-0.013		-0.001			-0.054	**	0.042		-0.097	**	**
Model 5: Baseline plus:														
Mother employed	-0.004		-0.018	*	0.013		*	0.000		-0.021		0.021		
Model 6: Baseline plus:							***							***
African American	-0.037	***	-0.015		-0.022	*	***	-0.038	***	-0.002		-0.036	*	***
Less than high school	0.004		-0.026	**	0.030	*	*	0.000		0.006		-0.006		
High school degree	0.002		-0.011		0.013			-0.009		-0.017		0.008		
Mother employed	-0.004		-0.021	**	0.017	*	*	0.002		-0.019		0.021		
Model 7: Baseline plus:							***							***
African American	-0.040	***	-0.015		-0.025	*	***	-0.043	***	-0.006		-0.037	*	***
Single biogical mother	0.009		0.001		0.008			0.022	*	0.025		-0.003		**
Biomother and stepfather	-0.003		0.003		-0.006			0.024	**	-0.004		0.028		*
Foreign	-0.011		-0.009		-0.002			-0.050	*	0.043		-0.094	**	*

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Notes: Global tests of model fit are based on the chi-square test of change in likelihood ratio of the model with the inclusion of a given variable. In cases where more than one variable is added, an additional test is conducted for the set of variables.

Appendix C.
Coefficients based on Discrete-Time Multinomial Logistic Regression Models of Cohabiting Outcomes: Women

Variable times calendar year	Single vs No Birth		Cohab vs No Birth		Marital vs No Birth		Single vs Cohab Birth		Marital vs Cohab Birth		Single vs Marital Birth		Tests of global fit
Model 1: Baseline plus:													
African American	-0.010		-0.069	***	-0.029	*	0.059	***	0.041	*	0.018		***
Model 2: Baseline plus:													
Less than high school	0.015		0.034	*	-0.015		-0.020		-0.049	*	0.030		*
High school degree	0.009		0.012		0.008		-0.003		-0.004		0.001		
Model 3: Baseline plus:													
Single biogical mother	0.018	*	-0.015		-0.007		0.033		0.008		0.025		
Biomother and stepfather	0.014		0.000		0.018		0.014		0.018		-0.004		
Model 4: Baseline plus:													
Foreign born	-0.008		-0.041		-0.013		0.033		0.028		0.005		
Model 5: Baseline plus:													
Mother employed	-0.014		-0.017		-0.010		0.003		0.007		-0.005		
Model 6: Baseline plus:													***
African American	-0.019	**	-0.081	***	-0.020		0.062	***	0.061	***	0.001		***
Less than high school	0.015		0.051	**	-0.009		-0.035		-0.060	**	0.025		**
High school degree	0.011		0.018		0.010		-0.008		-0.009		0.001		
Single biogical mother	0.022	*	0.004		-0.003		0.017		-0.007		0.025		
Biomother and stepfather	0.015		0.004		0.020		0.011		0.015		-0.004		
Model 7: Baseline plus:													***
African American	-0.009		-0.068	***	-0.028	*	0.059	***	0.040	*	0.018		***
Foreign	-0.007		-0.035		-0.012		0.027		0.023		0.004		
Mother employed	-0.014		-0.012		-0.009		-0.002		0.003		-0.005		

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)
Notes: Global tests of model fit are based on the chi-square test of change in likelihood ratio of the model with the inclusion of a given variable. In cases where more than one variable is added, an additional test is conducted for the set of variables.

Appendix D.

Coefficients based on Discrete-Time Multinomial Logistic Regression Models of Cohabiting Outcomes: Men

Variable times calendar year	Single vs No Birth		Cohab vs No Birth		Marital vs No Birth		Single vs Cohab Birth		Marital vs Cohab Birth	Single vs Marital Birth		Tests of global fit
Model 1: Baseline plus:												
African American	-0.018		-0.046	**	-0.040	*	0.027		0.006	0.021		**
Model 2: Baseline plus:												
Less than high school	0.007		-0.011		0.033		0.018		0.044	-0.027		
High school degree	0.004		-0.022		-0.025		0.026		-0.003	0.029		
Model 3: Baseline plus:												
Single biogical mother	0.009		0.030		-0.003		-0.022		-0.033	0.012		
Biomother and stepfather	0.010		0.011		-0.018		-0.002		-0.029	0.028		
Model 4: Baseline plus:												
Foreign born	-0.144	***	-0.010		0.082	*	-0.134	*	0.092	-0.226	***	***
Model 5: Baseline plus:												
Mother employed	0.007		-0.001		-0.049	**	0.008		-0.047	0.055	**	*
Model 6: Baseline plus:												**
African American	-0.021		-0.054	***	-0.050	*	0.034		0.005	0.029		***
Less than high school	0.010		-0.002		0.039		0.012		0.041	-0.029		
High school degree	0.005		-0.019		-0.023		0.024		-0.005	0.028		
Single biogical mother	0.013		0.042		0.002		-0.029		-0.040	0.011		
Biomother and stepfather	0.010		0.011		-0.018		-0.001		-0.029	0.027		
Model 7: Baseline plus:												***
African American	-0.016		-0.046	**	-0.039		0.030		0.007	0.022		***
Foreign	-0.140	***	-0.005		0.075	*	-0.135	*	0.081	-0.216	***	**
Mother employed	0.005		0.000		-0.044	**	0.005		-0.044	0.049	*	

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

Notes: Global tests of model fit are based on the chi-square test of change in likelihood ratio of the model with the inclusion of a given variable. In cases where more than one variable is added, an additional test is conducted for the set of variables.